

KIC Entrepreneurship
Finance: a first introduction

Programme July 12, 2010

1. Investment and Financing Decisions
2. Balance sheet and Income Statement
3. Cash flows and depreciation
4. Time value of money, annuities

Programme: continued

5. Required rate of return

6. Capital structure

7. Capital budgeting: NPV, payback and IRR

8. Valuation of shares, venture capital

The Finance function 1

A company has a number of *stakeholders* :

- Owners, share holders
- Customers
- Employees
- Social responsibility

A classical formulation of the objective of a company is:

“Creating shareholders value”

The Finance function 2

New trends:

- *Green investments*
- *Sustainability issues*
- *Shareholders are more active*
- *Much debate about the mix of equity and debt (also related to the credit crisis)*

The Finance function 3

Major tasks of the finance manager:

- *Find sources for financing activities and think about the mixture of debt and equity*
- *Working capital management (manage payables and receivables and inventory management)*
- *Investors relations: banks, private equity, venture capitalists*
- *Make decisions about investments (NPV etc)*

The Finance function 4

The financial manager has also administrative responsibilities

- *Financial statements (income statement, balance sheet, annual report)*
- *Contact with the external accountant*
- *Tax payments*

Note: ownership is not identical to responsibility for management (agency problem)

The Finance function 5

Active and passive

There is a difference between an investor who is managing an investment portfolio to build up a capital and the management of a company who invest in their own projects.

However: many lessons from the investment community are very relevant for the entrepreneurs.

It is all about balancing ***risk and return***

Financial statements 1

One source of information is the balance sheet of a company. It is a financial snapshot, taken at a point in time (often December 31). It gives an impression of all the assets and the sources of finance. The general structure is

$$\text{Assets} = \text{liabilities} + \text{equity}$$

Assets : cash, buildings, equipment, goodwill, inventories, account receivable, intangibles

Liabilities: loans, accounts payable etc

Financial statements 2

Now have a look at your material. The company WWS makes a start in January 2005 with a capital of \$ 250.000. They buy furniture and merchandise for $60 + 80 = \$140.000$

During the year there several activities take place.

Assignment: *Try to construct from the data the closing balance.*

Financial statements 3

The income statement is a document to report about the business for a specific period. It will end with the net profit/loss over that period.

Basic structure:

*Sales – costs of goods sold – other costs =
cash flow from sales.*

*Deduct now the depreciation and you will get
EBIT : Earnings before interest and taxes*

Financial statements 4

Depreciation is used because the value of plant & equipment goes down after using it for a year.

Example:

You have a truck. It costs 100.000. After 5 years it is likely to be sold for 20.000 (salvage value). During the 5 years we lose 16.000 each year. But it is not a cash flow!

Depreciation is very important for tax reasons.

Financial statements 5

Depreciation is also relevant for intangible assets. This can be patents IPR and goodwill (specially after a take-over).

This makes GAAP accountancy rules very important in the business.

Another related issue is the difference between market value and book value of a company. Many issues with the internet bubble and the credit crisis are related to valuation issues.

Where do you find the money?

1. Equity

- Participations (incubator, venture capital)
- Just your own savings
- Public offering of shares (IPO)
- Financial support from friends and relatives

2. Debt

- Loan from a bank
- Public offer of bonds
- Private placement of loans

Financial Algebra 1

- Simple and compound interest rates
- Calculating present values
- Perpetuities and Annuities
- ***Future value*** = Amount to which an investment will grow after earning interest
- ***Simple interest*** = Interest earned on the original investment
- ***Compound interest*** = Interest also earned on earlier received interest.

Financial Algebra 2

Example 1

We earn 6% interest for five years on a principal balance of € 1000.

- Interest earned annually is $1000 \times 0.06 = € 60$

Example 2: Simple interest more years

Interest earned at a rate of 6% for five years on a balance of € 1000

<u>Today</u>	<u>Future years</u>					
Year		1	2	3	4	5
Interest		60	60	60	60	60
Principal	1000	1060	1120	1180	1240	1300

Financial Algebra 3

Compound interest: you will also receive interest on the interest you earned last year.

$$FV = 1000 \times (1 + r)^t$$

Now we can calculate $FV = 1000 \times (1.06)^5 = \dots\dots\dots$

CASE 1:

Suppose an investment manager can invest €40.000 at a compound rate of 5.7% during four years. Next he expects to invest the proceeds at a compound rate of 7.2% during the next three years. How much is the end result after 7 years?

ANSWER: $40.000 (1.057)^4 (1.072)^3 = \text{€ } 61.510$

Financial Algebra 4

CASE 2

What is the FV of € 100,000 invested at a compound interest of 5% over a period of 7 years and 3 months?

ANSWER

$$100.000 (1.05)^{7,25} = 142.437$$

The assumption is here that the process of compounding is a continuous function.

Let us study the issue of making the periods shorter.

Imagine that we split the year in two periods.

8 % interest would be 4% semi-annually

Financial Algebra 5

What if we do compound interest after every half year.

$$€ 1000 \times (1.04)^2 = \dots\dots$$

This is different from 1080 !

Now let is make this period shorter.

Interest payments every month.... every week.... every day... every minute

This will result in a limiting value. This is called the continuously compounded rate of interest r^C .

$1 + R = e^{r^C}$ When we start with $r^C = 0,10$ we will find an annual interest rate of $R = \dots\dots\dots$

Bonds and loans

For debt there is the distinction between:

- Long term
- Short term (usually less than 1year)

Mortgage loans

Bonds issued on the capital market

Characteristics are:

- Nominal value (*par value or face value*)
- Annual interest payments (Coupons)
- Maturity date to pay back the loan

The price of debt

- Interest rates depend on *market rate, default risk and term structure*
- For a bond the annual interest payment is usually fixed at the beginning. Market price of a bond moves in opposite direction.
- Start is the risk free rate. This is defined as the rate that will be paid on government bonds
- There is an additional component in the interest rate that reflects the risk (basispoints: 100 bp = 1%). This is related to risk. Some company can only borrow at high rates.

Who is active on the bond market?

- National and local government
- Corporates
- Many others

Trading of bonds:

- Starts with a public offer, supported by banks
- You can sell your bond on the stock exchange
- A lot of over-the counter placements

Example

It started as a 6% bond. Remaining lifetime 3 years.

- Future Cash flows 60, 60, 1060.
- *Imagine* market rate is now **4%**. This results in:

$$PV = \frac{60}{1,04} + \frac{60}{(1,04)^2} + \frac{1060}{(1,04)^3}$$

- That is 55,50 more than the face value!
- $PV = 57,69 + 55,47 + 942,34 = 1055,50$

Book value and Market value

Book value reflects the formal valuation of the assets and liabilities on the balance sheet.

Problem: it does not always reflect the true value

Some fixed assets may be difficult to sell

What is the value of goodwill, IPR?

Loans need to be revalued if the interest rates in the market move up or down

Market value:

What value will be suggested based on the price in the financial markets for equity and debt?

Sometimes big differences!

Equity 1

- Initial capital supplied by the founders
- Shares issued by the company
- Retained earnings
- Other informal investors or institutions

Equity 2

- Share holders are the owners of the company
- Dividend payments
- Suppliers of debt have a preference position
- Not all of the profit will be paid out as dividend.
Company growth will be financed by retained earnings

Equity 3

- P/E – ratio: price of equity divided by profit
- For mature companies P/E of 10 to 15 is fair.

Sometimes 20 to 100. Based on high expectations regarding growth.

What is a fair price for a share?

Equity 4

a. *Book value*

See the balance sheet. Might be misleading.

b. *Liquidation value*

What is the sum if you sell all the assets.

c. *Replacement value*

New competitors may enter the market

Tobin's q-ratio: Market / Book

Should be around 1

d. *Market value*

Equity 5

There can be other factors:

- profit potential not visible on the balance sheet
- *R&D*-activities that will generate future profits
- expectations for the whole market and the economy
- Hidden values like undervalued assets

Equity 6

Well known is the

Dividend Discount Model (DDD)

The value of a share is the sum of the present value of future dividends.

For this we need an estimate of D_1 , D_2 , D_3 , etc

Is there (constant) growth?

And we need a discount rate.

Equity 7

We use here:

required rate of return k (also symbolised as r)

Basic rule: Use a high value for k if risk level is high. Lower k for lower risk.

- $k = r_f + \text{risico premium}$

Risico premium will be computed with the CAPM (*Capital Asset Pricing Model*)

Leverage 1

Two types

- (a) operational leverage and
- (b) financial leverage

(a) Is about the mixture of cost components:

fixed costs and variable costs

(b) Is about the financial mixture:

influence of the mix of debt and equity

Leverage 2

Operational:

Fixed costs are 100.000

Per unit product we have variable costs of 50.

Sales revenue per unit is 90

Number of units sold 4000.

What is your gross profit?

$$4000 \times (90 - 50) - 100.000 = 60.000$$

Sales do increase with 1%. Profit increase?

Leverage 3

1% more = 40 additional units of the product

Additional profit is 1600.

Compared to the initial profit this is an increase of 2,67%.

Operational leverage here is 2,67

Financial Leverage 1

EBIT is 10.000

The company is financed with 1000 shares of € 10 each and a loan of €90.000 with interest rate 8%.

Tax level is 40%.

What are the earnings per share (EPS)?

Financial leverage 2

First are the interest payments:

8% on 90.000 is €7.200.

This leaves $10.000 - 7.200 = 2.800$

Now we have to pay taxes: $0.40 \times 2800 = 1.120$

Net profit 1.680

Hence profit per share is € 1.68

Financial leverage 3

Assume EBIT increases with 1%.

What will be EPS now?

After interest payments we have

$$10.100 - 7.200 = 2.900$$

Pay tax: This is $0.4 \times 2.900 = 1.160$

This leaves 1,740.

Hence profit per share € 1,74

An increase with 3,5%